

## NOTES ON *ASTROTRICHA* DC. (ARALIACEAE) IN QUEENSLAND

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### Summary

*Astrotricha cordata* and *A. intermedia*, both with affinity to *A. pterocarpa* Benth., are described as new. A description of *A. pterocarpa* s. str. is provided. The correct name for Queensland plants previously known as *A. floccosa* DC. is shown to be *A. latifolia* Benth. A key to the Queensland species is presented.

### Introduction

*Astrotricha* is an endemic Australian genus comprising 15-20 species. The genus is largely confined to Victoria, New South Wales and Queensland, while there is one species endemic to the Hamersley Range area of Western Australia.

*A. pterocarpa* was named by Bentham from specimens collected in north Queensland, the epithet meaning 'winged fruit'. Subsequently the name *A. pterocarpa* has been applied to all specimens of *Astrotricha* which possess winged fruit, despite floral and vegetative differences which occur in southern Queensland specimens.

*A. pterocarpa*, as previously circumscribed, comprises three taxa which have in common their winged fruit, large inflorescence and single-stemmed habit. These taxa are quite striking in the field, standing tall over surrounding shrubs. They have not been extensively collected, probably due to the large size of the leaves and inflorescences, and the difficulty of making a suitable herbarium specimen. There is however ample fertile material for the purpose of describing the taxa in this group.

In addition to absolute measurements and shape, the characters used for distinguishing taxa of this group have been the colour of petals, rachises and fruits; the presence or absence of indumentum, the colour of the indumentum; presence of stipules, shape of the midrib of the leaves, leaf peltation and the number of flowers per inflorescence.

This paper also reports on the misapplication of the name *A. floccosa* DC. for plants indigenous to Queensland. Specimens previously identified as *A. floccosa* are referable to *A. latifolia* Benth.

### Taxonomy

*Astrotricha cordata* A. Bean sp. nov. affinis *A. pterocarphae* a qua foliis multum latioribus cordatis, floribus purpureis et inflorescentiis glabris differt. **Typus:** Blackdown Tableland, c. 35 km SE of Blackwater, September 1971, R.J. Henderson H1018, L. Durrington and P. Sharpe (holo: BRI).

Slender shrub up to 6 m high, usually single-stemmed. Lower parts of stem glabrous, marked by leaf scars, upper parts of stem densely stellate-tomentose, white. Leaves spirally alternate, often with a pair of leafy stipules each up to 5 × 2 cm at the base of the petiole; petioles terete, 12-21 cm long, densely stellate-pubescent, creamy white; blades discolourous, ovate, apex acute, base cordate, sometimes peltate, 17-27 × 9-16 cm; upper surface of newly developed leaf blades stellate-pubescent, becoming glabrous and dark green with maturity; leaf blade undersurface densely stellate-pubescent, creamy white; midrib and major veins impressed on upper surface, raised below; midrib rounded in cross-section. Inflorescence a large terminal panicle, up to 120 × 60 cm, purple or brown in colour, glabrous except for the bracts which possess a few stellate hairs; bracts linear, 2-10 mm long; unit inflorescence umbellate, 7-14-flowered. Peduncles and pedicels slender; pedicels 4-8 mm long. Flowers unisexual or bisexual, glabrous, purple, with 5 small, acute calyx teeth, petals 5, acute, caducous; stamens 5, purple, alternating with the petals; anthers dehiscent by longitudinal slits; ovary inferior, 2-locular, styles 2, recurved. Fruit a schizocarp, rarely dehiscent, glabrous, slightly fleshy, laterally compressed, elliptical, 10 × 5 mm, surmounted by persistent styles; initially not winged, as

fruits mature epicarp expanding to form two distinct papery wings, at right angles to orientation of fruit and styles; wings each c.  $11 \times 5$  mm; pedicels 8–13 mm long. **Fig. 1.**

**Selected specimens:** Queensland. LEICHHARDT DISTRICT: Expedition Range, E of Rolleston, Sep 1962, *Story & Yapp* 268 (BRI,CANB); Mt Playfair-Mt Faraday area, Sep 1982, *O'Keefe* s.n. (BRI); Salvator Rosa N.P., Sep 1990, *Bean* 2316 (BRI); Carnarvon Gorge, on track to Bulimba Bluff, Dec 1989, *Makinson* 498 (BRI,CANB,CBG,NSW); Glenmoral Gap, 13 km WSW of Theodore, Sep 1986, *Forster* 2633 (BRI); Nathan Gorge, SW of Cracow, Oct 1989, *Bean* 1140, 1141, 1142 (BRI). BURNETT DISTRICT: hills N of St John Creek, W of Eidsvold, Oct 1989, *Bean* 1143, 1144 (BRI); Dead End Lookout, Coomingleh S.F., Oct 1983, *Henderson* H3003 (BRI); "Manar", Rocky Paddock, 45 km SSE of Mundubbera, Nov 1984, *Forster* 1931 (BRI). WIDE BAY DISTRICT: Mount Walsh, near Biggenden, Jun 1983, *Bean* 22 (BRI). New South Wales. Carrawarra Ridge, Mt Neville area, NNW of Grafton, Jun 1984, *Benson & Dodkin* 35 (NSW).

**Distribution and habitat:** *A. cordata* is widely, though sporadically distributed in south-eastern Queensland from Blackdown Tableland (23°45'S) to south of Mundubbera (26°00'S). It is also known from a single locality in New South Wales, NNW of Grafton (see above). This is a remarkable disjunction, being almost 400 km from the nearest Queensland locality (**Map 1**). *A. cordata* inhabits skeletal soils derived from sandstone, granite, or occasionally rhyolite. It occurs as a component of open eucalypt woodland and tends to grow in open rocky areas or cliff lines.

**Flowering period:** September to November.

**Notes:** This species has been observed to be monocarpic, that is, it grows for a few years, flowers once, fruits, then dies. Fruiting plants often have already shed all their leaves, and soon after the fruits mature, the plant dies. Sometimes however, apparently dead plants will sucker from ground level. These growth characteristics also occur in the related species, *A. pterocarpa* and *A. intermedia*.

*A. cordata* is readily distinguished from *A. pterocarpa* by its broader leaf blades with a cordate base, midrib rounded in cross-section, longer petioles, white indumentum, purple flowers, glabrous inflorescences and longer pedicels.

**Conservation status:** *A. cordata* is widespread and occurs within several National Parks.

**Etymology:** The specific epithet refers to the distinctly cordate leaves of this species at all stages of growth.

**Astrotricha intermedia** A. Bean sp. nov. affinis *A. pterocarpae* a qua foliis aliquantum latioribus, floribus glabris purpureis et inflorescentiis glabris floribus paucioribus differt. **Typus:** Nogoia River camping area, Salvator Rosa National Park, 9 December, 1989, *R.O. Makinson* 600 (holo: BRI; iso: CANB,NSW).

Slender shrub up to 6 m high, usually single-stemmed. Lower parts of stem glabrous, upper parts of stem stellate-tomentose. Leaves spirally alternate, stipules absent; petioles up to 10 cm long, densely stellate-pubescent, creamy yellow to brown. Blades discolourous, lanceolate with apex acuminate and base obtuse, occasionally hastate,  $14\text{--}22 \times 3.3\text{--}5.5$  cm; upper surfaces dark green, glabrous; undersurfaces of blade densely stellate-pubescent, creamy yellow to brown; midrib impressed on upper surface, prominent below, acute in cross-section. Inflorescence a large terminal panicle, purple to almost black in colour, glabrous except for stellate hairs on bracts; bracts linear, 2–8 mm long; unit inflorescence umbellate, 7–11-flowered. Pedicels slender, 6–9 mm long. Flowers mostly bisexual, glabrous, purple, with 5 small, acute calyx teeth; petals 5, acute, caducous; stamens 5, purple, alternating with the petals; anthers dehiscing by longitudinal slits; ovary inferior, 2-locular, styles 2, recurved. Fruit a schizocarp, rarely dehiscent, glabrous, slightly fleshy, laterally compressed, elliptical,  $10 \times 5$  mm, surmounted by persistent styles; initially not winged, as fruits mature epicarp expanding to form two papery wings, at right angles to orientation of fruit and styles; wings each c.  $9 \times 5$  mm; pedicels 8–10 mm long. **Fig 1.**

**Selected specimens:** Queensland. PORT CURTIS DISTRICT: Byfield, Sep 1931, *White* 8140 (BRI); Canoona, 30 miles [48 km] north-west of Rockhampton, Sep 1943, *Blake* 15317 (BRI); Bulburin State Forest, Apr 1980, *McDonald* 3215 *et al.* (BRI); Blackmans Gap, SW of Miriam Vale, Sep 1990, *Bean* 2405, 2406 (BRI). LEICHHARDT DISTRICT: 11 miles [18 km] E of 'Mantuan Downs', Apr 1946, *Everist* 2550 (BRI); Main Range, between Alpha and Tambo, Aug 1966, *Gittins* T79 (BRI); Nogoia River, Salvator Rosa N.P., Aug 1977, *Blaxell* 1489 & *Armstrong* (BRI,NSW); 'Riverside', W of Springsure, Oct 1987, *O'Keefe* 878 (BRI).

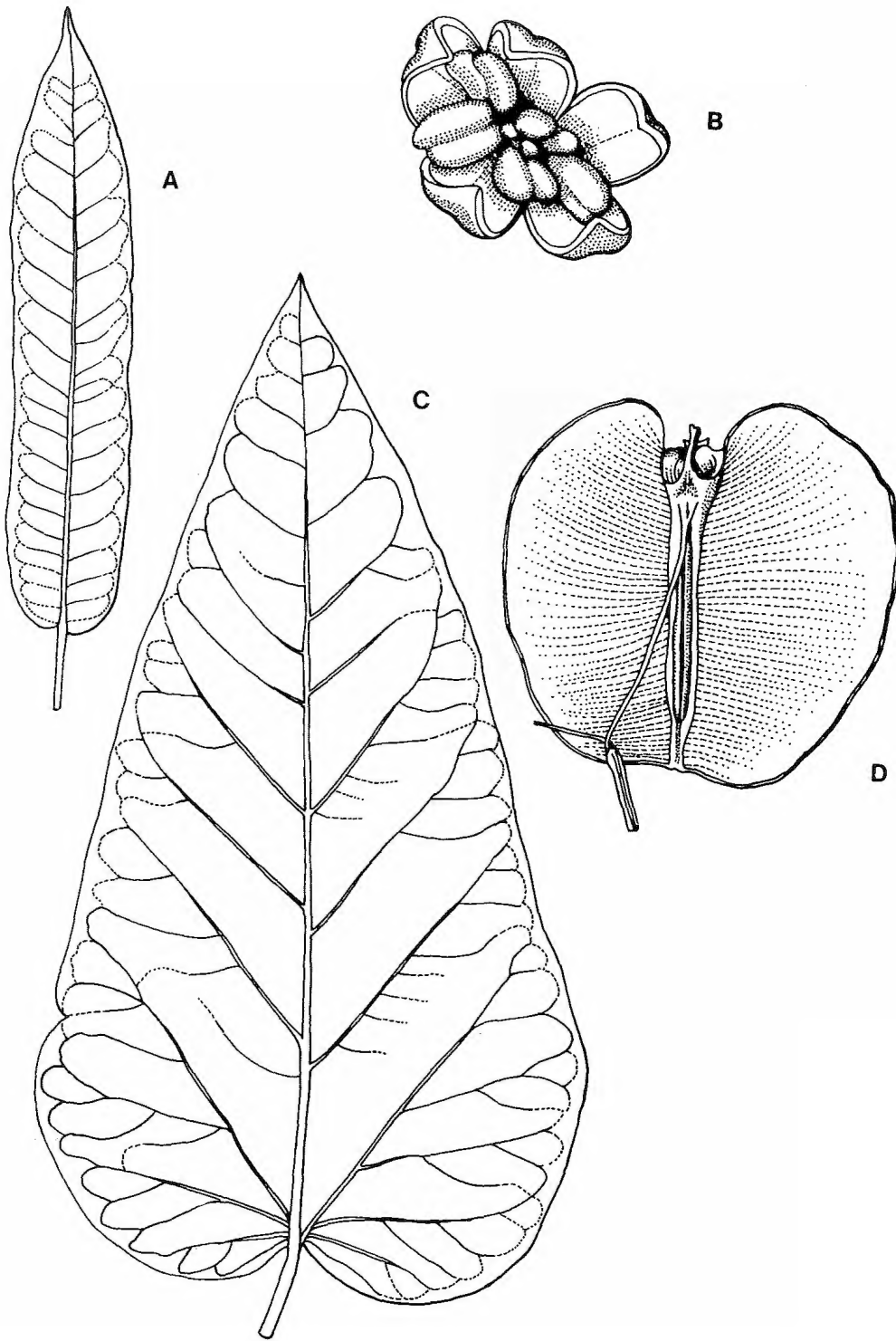


Fig. 1. *Astrotricha intermedia*: A. leaf  $\times 0.5$ . B. flower  $\times 8$ . *Astrotricha cordata*: C. leaf  $\times 0.5$ . D. fruit  $\times 4$ .

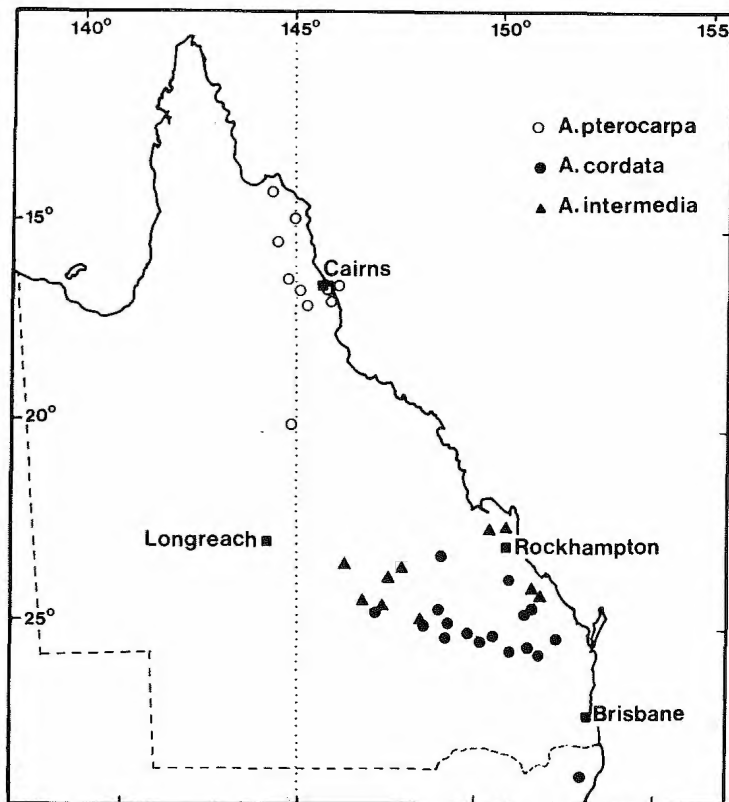
**Distribution and habitat:** *A. intermedia* has a broad, but disjunct distribution. It is found in a few areas near Rockhampton and then on the sandstone belt around Springsure and Tambo (Map 1). It grows in open eucalypt woodland, in shallow sandy soils over sandstone, or occasionally on serpentinite.

**Flowering period:** September to November.

**Notes:** Plants with hastate leaf bases occur in the Salvator Rosa N.P. While this leaf shape is unique in the genus, so far as is known, its occurrence is sporadic, and not correlated to any other morphological differences, and so is not likely to be of any taxonomic significance. The flowers and inflorescences of *A. intermedia* are very similar to those of *A. cordata*, but the species may be readily and consistently distinguished as *A. intermedia* has much narrower leaves, shorter petioles, midrib acute in cross-section, yellowish or brownish tomentum and never has stipules. It is notable that these two species grow in adjoining populations in the Carnarvon National Park without intergradation. Juvenile plants of *A. intermedia* may be confused with those of *A. cordata*, as the leaves of the former are broader at that stage.

**Conservation status:** *A. intermedia* is moderately widespread, and is conserved in the Carnarvon National Park.

**Etymology:** The specific epithet is a reference to this species being intermediate, geographically and morphologically, between *A. cordata* and *A. pterocarpa*.



Map 1. Distribution of *Astrotricha* spp.

***Astrotricha pterocarpa* Benth.** Fl. austral. 3: 379 (1867). Type: Fitzroy Island, *W. Hill* (K, photo!).

Slender shrub up to 7 m high, usually single-stemmed. Lower parts of stem glabrous, marked by leaf scars, upper parts of stem covered by brown stellate tomentum. Leaves spirally alternate, stipules absent; petioles 5.5–12.5 cm long, flattened at base, covered by dense brown stellate tomentum; blades discolourous, lanceolate, apex acute, base obtuse or slightly cordate, mostly 15–27 × 1.7–4.0 cm, glabrous and dark green above; leaf blade below covered by brown dense stellate tomentum; midrib impressed above, prominent below, acute in cross-section. Inflorescence a terminal panicle, up to 100 × 50 cm; rachises, peduncles and pedicels all floccose, with stellate hairs; bracts linear, 2–10 mm long; unit inflorescence umbellate, 10–15-flowered. Flowers mostly bisexual, creamy or pale green, calyx teeth 5, small, acute; petals 5, hairy outside, glabrous inside, caducous; stamens 5, creamy, alternating with the petals, anthers dehiscent by longitudinal slits; ovary inferior, 2-locular, styles 2, recurved. Fruit a schizocarp, rarely dehiscent, pubescent, slightly fleshy, laterally compressed, elliptical, c. 12 × 7 mm, surmounted by persistent styles; initially not winged, as fruits mature epicarp expanding to form two distinct papery wings, at right angles to orientation of fruit and styles; wings each c. 11 × 5 mm; pedicels 4–5 mm long.

**Selected specimens:** Queensland. COOK DISTRICT: Altanmoui, Jul 1972, *Hyland* 6346 (QRS); east of Jowalbinna-Maytown road, Jul 1990, *Bean* 1768 (BRI); Isabella Falls, NW of Cooktown, Jul 1990, *Bean* 1953, 1954 (BRI); Mount Mulligan, 40 km NW of Dimbulah, Apr 1985, *Clarkson* 5908 (BRI); Fitzroy Island, Oct 1946, *Flecker* 10510, 10511 (NSW, QRS); Watsonville, Nov 1931, *Gallogly* s.n. (BRI); ridge above Yarrabah, Sep 1986, *Starkey* 62 (QRS); Walsh's Pyramid, Sep 1972, *Webb & Tracey* 13778 (BRI); above Bessie's Creek Falls, Jul 1937, *Flecker* 3633 (BRI, QRS). NORTH KENNEDY DISTRICT: 8 miles [13 km] W of Pentland township, Jun 1953, *Perry* 3554 (BRI); 32 km SW of Pentland, Sep 1974, *Williams* 62 (BRI); 25 km W of Pentland on Great Dividing Range, Jul 1975, *Chapman* 1323 (BRI, CANB, K).

**Distribution and habitat:** *A. pterocarpa* is confined to north Queensland where it extends from the Melville Range area north of Cooktown southward to the Burra Range near Pentland (Map 1). It grows on shallow sandy soil, over sandstone, in eucalypt woodland.

**Flowering period:** July to October, but one flowering specimen collected in April.

**Conservation status:** *A. pterocarpa* is not known to be present in any conservation reserve, but it is not considered rare or endangered at this time.

#### Identity of *A. floccosa* DC.

*Astrotricha floccosa* DC. was one of the two species originally named by De Candolle based on specimens collected by Sieber in the vicinity of Sydney. For over 100 years, it has been accepted that *A. floccosa* occurs in Queensland. I have examined the type specimen of *A. floccosa* (Nova Hollandia, 1825, Sieber 258 (K, photo!)) and it clearly does not match any material found in Queensland.

The Queensland material matches that of a taxon widespread in New South Wales, and currently called *A. latifolia* Benth. in that state (Beadle 1980; Beadle *et al.* 1982; R.O. Makinson pers. comm.).

To date, attempts to locate the type of *A. latifolia* have proved unsuccessful (G. Leach pers. comm.). However in his original description (in Hueg. Enum. 55.), Bentham states that the petioles of *A. latifolia* are '2–3 pollicari' long. This corresponds to approximately 5–8 cm long. The Queensland 'floccosa' material, and the New South Wales material determined as *A. latifolia* often have petioles which are of that length, but all other *Astrotricha* species (except the *A. pterocarpa* group) have petioles which are considerably shorter. Based on this, I concur with the use of *A. latifolia* in New South Wales, and propose that this name be taken up for the Queensland material previously identified as *A. floccosa*.

An unnamed species (sp. Q2 in the key below) occurs sporadically in northern New South Wales and southern Queensland. It resembles *A. floccosa* because of its very floccose indumentum, but in other respects, it is more closely related to *A. longifolia*.

**Key to the Queensland species of *Astrotricha***

1. Tall shrubs (2–7 m), mostly unbranched; inflorescence >70 cm long;  
fruits winged ..... 2  
Shrubs less than 3 m tall, mostly branched; inflorescence <45 cm long;  
fruits not winged ..... 4
2. Leaf blades 90–160 mm wide, base cordate, midrib rounded below ..... **A. cordata**  
Leaf blades 17–55 mm wide, base obtuse, midrib keeled below ..... 3
3. Umbels 10–15-flowered; inflorescence woolly hairy, flowers creamy-white;  
leaf blades 17–40 mm wide ..... **A. pterocarpa**  
Umbels 7–11-flowered; inflorescence glabrous, flowers purple; leaf blades  
33–55 mm wide ..... **A. intermedia**
4. Leaf blades below green, glabrous ..... **A. glabra**  
Leaf blades below white, grey or brown, pubescent ..... 5
5. Leaf blades >18 mm wide, petioles >20 mm long ..... **A. latifolia**  
Leaf blades <18 mm wide, petioles <20 mm long ..... 6
6. Leaf blades below, petioles and pedicels floccose or woolly hairy .. **A. sp. Q2**  
Tomentum on leaf blade below and on petioles closely appressed ..... 7
7. Leaf blades 3–6 mm wide; inflorescence glabrous, purple ... **A. biddulphiana**  
Leaf blades 5–17 mm wide; inflorescence pubescent, white ..... **A. longifolia**

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